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ABSTRACT

The telecommunications project for the deaf in the greater Boston area which is described is being developed as an institutionalized communication network for the deaf community, following the success of a demonstration project. A summary of the trial operations (DCI.DEAFNET) and demonstration phases is provided, which covers the purchase of equipment and its distribution to a selected group of 34 deaf families and service providers, the establishment of databases for the deaf users, and the development of instructional materials to teach deaf users the system. An assessment of project benefits includes an examination of intended beneficiaries, beneficiaries' needs, other available communication technologies, user characteristics, major expected benefits, actual benefits, message exchange capabilities, information flow to service agencies, barriers to implementation, educational benefits to users, Interactive Language Assistance for the Deaf (ILIAD) and Language-Adjusted News (LAN), medical information availability, and cultural information dissemination. Technical, institutional, geographic, and software-related barriers to implementation and utilization are also described. Additional information is included on strategies for institutionalization, dissemination, and financing. Various public relations and other project-related materials are appended. (LMM)

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COMPUTER-AIDED TELECOMMUNICATIONS FOR THE DEAF

(A PROTOTYPE FOR THE HEARING)

FINAL REPORT -- December 1, 1981

DEPARTMENT OF HEALTH, EDUCATION AND WELFARE

OFFICE OF TELECOMMUNICATIONS POLICY

2

IR 010 720

COMPUTER-AIDED TELECOMMUNICATIONS FOR THE DEAF

(A Prototype for the Hearing)

FINAL REPORT

Three Year Demonstration Grant

Starting Date- April 1, 1978

Completion Date- December 1, 1981

Deaf Community Center
95 Bethany Road
Framingham, MA 01701

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The demonstration would not have achieved its goals and successes without the special contributions of the following:

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ABSTRACT

In April, 1978 the Deaf Community Center Framingham, MA received funding from the Department of Health, Education and Welfare to investigate the uses of computerized telecommunications for the deaf in the greater Boston area. Although conceived as a demonstration project, one of the primary goals was to develop an institutionalized communication network. The demonstration phase will end on November 30, 1981, having reached this goal of institutionalization and we are now working towards becoming a self-sustaining service to better meet the communication needs of the deaf community. A full description of our expanded project, DCI.DEAFNET, is included in this report (pp. 29-32).

During the start-up phase of the project, staff was hired, equipment purchased and distributed to a selected group of deaf users (34 deaf families) and service providers, data bases of information for the deaf user were established, and instruction materials necessary to teach deaf users the system were developed. An Advent Screen was purchased to facilitate large group instruction.

Evaluation of both the value of message exchange and of providing information flow for the deaf user was a continuing process through all phases and was added to the base of needs-assessment data already established. We particularly looked at these questions: could the average deaf person learn this communication skill; what were the most valuable aspects of this service to the deaf user; and, would the deaf user find this service so useful/valuable that he would pay a service and/or a computer-use fee.

TRIAL OPERATIONS AND DEMONSTRATION PHASES

By February, 1980 these two phases had been completed. Model 43 Teletypewriter terminals had been installed in the homes of 34 deaf families, five public service providers, and four agencies serving the deaf. Data bases of information were well established as bulletin boards with continuing (daily and weekly) updates. In addition, 5 schools for the deaf and one deaf club received terminals.

The HERMES electronic mail message system (developed by Bolt Beranek and Newman of Cambridge, MA) was selected for the network's use. Available in the Greater Boston area it had many features which made it attractive to the deaf user: message system, editing features, bulletin board capability, programming, computer games, and real-time communication.

An Operational and Institutionalization evaluation of the project took place in 1979. A survey of the users revealed that only two of the 34 families would not pay for the service. Users at this time included: 40 deaf, 5 hearing, a hospital, a museum, Deaf Senior Citizens, and the Massachusetts Office of Deafness. A user fee between \$5-15 per month was instituted. The collected funds were targeted for operating expenses needed when government funding ended.

Based on this positive feed-back, the project scope was broadened. During the second year of the project, plans were

formulated to institutionalize the network, culminating with the incorporation of Deaf Communications Institute in February, 1980 whose goals stated: "To further developments in communication for the deaf and institutionalize the successes already achieved." Control of this new entity, stated the by-laws, "will be held by a community-based board of trustees that shall always be 51% deaf."

As part of the overall plan to insure the continuation of DCI.DEAFNET services, a proposal was submitted to The Department of Commerce, The National Telecommunications & Information Admin. (NTIA) to establish a computer facility under the administration of Deaf Communications Institute. The proposal was not funded.

A major policy decision was made when DCI.DEAFNET changed message systems from HERMES to General Telephone and Electronic's TELEMAIL. The switch was made for economic reasons. First, TELEMAIL could be used by DCI.DEAFNET during non-prime time resulting in considerable savings to the user. Second, since TELEMAIL is a national system, the user-base could be expanded and made much more attractive to all users. The deaf community was offered a communication network which would allow them access to others throughout the country without the cost of long-distance telephone service and on an equal basis with whomever they spoke whether that person was deaf or hearing.

However, the change in message systems had a greater impact than had been expected. Users of the old system had great difficulty in adapting to TELEMAIL; many users discontinued the service even though they liked the concept of computer-assisted communication. They were uneasy with the new system for the

following reasons: a) They were limited to non-prime time (6 p.m. - 7 a.m.; all day Saturday and Sunday); b) they lost valued features of HERMES (real time connection, editing and correcting abilities, games and basic programming); c) they were impatient with "working out the bugs" of this new system. (It is important to note that hearing and computer professionals in the DCI.DEAFNET group experienced as much difficulty with the transition as the deaf members.)

Having learned one system, the original user-group was reluctant to learn another. Having gained one set of computer skills, they were unwilling to give them up for a broader capability. When new users, whether deaf or hearing, were added to the DEAFNET system, they did not experience the same learning and adaptation difficulties of TELEMAL as did the users who had been trained originally on HERMES.

Another situation which resulted in a loss of users occurred at this time. As different users lost the novelty for something new, they used DCI.DEAFNET less and therefore generated fewer messages to others on the system. This decrease in usage caused more than half of the Boston area users to drop off the network. Other electronic mail systems have experienced a similar phenomena, i.e., the EIES network (Electronic Information Interchange System, New Jersey Institute of Technology), as recorded in their published evaluation report. This finding indicated that a disability is no barrier to learning how to use a message system. Although this was a discouraging aspect of the project, it did force the staff to reevaluate DCI.DEAFNET services, fees, and marketing strategy. A "typical DEAFNET user" was profiled and services began to be tailored to this user. (see pg. 7)

Funding for DCI.DEAFNET became an urgent priority. A proposal, written to GTE, the parent company for TELEMAL, was funded and has granted enough monies to support the system's operational budgets and to subsidize current users for fiscal year 1981 to 1982. In addition GTE's public relations department is assisting in a nation-wide awareness and marketing campaign which is being developed in order to sell the system to enough users to make the project not only cost effective but a useful communication tool for all on the system.

Funding plans also include a new user fee structure which went into effect on May 1 with a revised costing to be effective September 1, 1981. (See Appendix I)

Telecommunication equipment which allows the user either BAUDOT (5 level) or ASCII (8 level) access is now a reality. This should have a profound effect on the success of computerized communication systems such as DCI.DEAFNET. Many, many deaf persons are now buying the 5 level TDD as a "necessity." A TDD gives them telephone, real-time communication capability. Dual-access equipment which is currently being offered at the same price as one-level access equipment makes the possibility of purchasing the equipment necessary for DCI.DEAFNET services much more affordable and attractive to the user.

In California, the telephone company must provide, by law, dual access equipment to certified deaf persons. This legislation is expected to have a ripple effect across the United States increasing the number of people who will have the equipment to join computerized networks such as DCI.DEAFNET.

ASSESSMENT OF BENEFITS OF PROJECT

The major change during the past three years was the change from a local to a national focus when DCI.DEAFNET switched from the HERMES message system to TELEMAL. (see pg. 40 for details)

A second change in direction stems from an evaluation of the value of data bases for DCI.DEAFNET users. Joseph Blatt, producer of The Captioned News for WGBH-TV in Boston, wrote in his summary report: "DEAFNET at the WGBH Caption Center"

"The Caption Center undertook a survey to measure users' appreciation of the news service and to elicit their suggestions for improvements. We received fewer than ten responses, at a time when the DEAFNET subscription list was well over fifty. Unfortunately, this response rate may accurately reflect the users' (lack of) enthusiasm for the news service."

(See Appendix II for a copy of the Survey)

This comment and others, the difficulty of funding staff to provide this information base for the system, the cost to the network user to retrieve this information (he must use computer time to get it), and the general lack of interest in data bases on the network have helped us to reach the conclusion that the real value of DCI.DEAFNET is as an electronic mail system.

Its secondary strength is also a form of electronic mail -- announcements and invitations directed to the general deaf community. The information which has been offered on our bulletin boards may not be sufficiently unique to motivate use, especially when connect-time fees become a part of the equation. According to Joseph Blatt, "Although our DEAFNET news service

remains the only up-to-the-minute news source available to deaf people in the early evening, we suspect that users relied much more on the Captioned ABC NEWS and the next morning's newspaper."

Intended Beneficiaries

The intent of the original proposal was to devise and put into place a communication network for deaf users within the Greater Boston area. The target population included individual deaf users (adult and children), service providers to the Deaf, and schools for the deaf.

As the scope changed from a local to a national level and as more emphasis was placed on enrolling leaders in the deaf community to the network, a profile of a "potential user" of DCI.DEAFNET services was written.

1. Of the 1.8 million deaf persons in the United States, we project 5% of this population are potential users of DCI.DEAFNET.
2. The potential user in this first expansion stage will:
 - a) be in a leadership position of a deaf organization such as an officer of the National Association of the Deaf or a board member of The Oral Deaf Adult Section of the Alexander Graham Bell Association of the Deaf, or Telecommunications for the Deaf, Inc.
 - b) need to communicate easily (for social or business reasons) with other members of his organization throughout the country. This person maintains social and alumni contacts throughout the country.

3. The potential user will want the following services in order of priority:
 - a) message service
 - b) computer conferencing
 - c) specific bulletin boards of information provided for and by the deaf (ie., The National Captioning Institute)
 - d) localized bulletin boards of information announcing church events, socials, meetings, etc.

Currently the users of DCI.DEAFNET include individual deaf persons, two deaf/blind individuals, a number of hearing people (including interpreters, deaf educators and rehabilitation counselors), service providers to the deaf (such as the Massachusetts Office of Deafness, DEAF, Inc., a counseling project under the sponsorship of NAD), as well as many leaders of deaf organizations throughout the country. The organizations represented are: National Association for the Deaf (NAD), Telecommunications for the Deaf, Inc. (TDI), Oral Deaf Adult Section (ODAS).

Specific Needs of Beneficiaries

The project was designed to meet the needs of the deaf, who heretofore have been excluded from many communication resources. For example, of the 12 million hearing residents in Massachusetts, 12 million have access to and depend upon a telephone. Of the 39,000 deaf residents of the Commonwealth, only 1,000 have a TDD, a telecommunications device, which allows them to use a telephone.

Deafness is not only the inability to hear; it is also a barrier to learning and communication. A deaf student in a

hearing class needs an interpreter; a deaf person attending a community affairs meeting needs interpreting services. And consider the information a hearing person receives over the car radio (95% of cars have radios, 62% of driving time is spent listening). A deaf person hears no traffic report, no weather bulletin, no up-to-the-minute news, and especially no emergency bulletins.

DCI.DEAFNET offers increased communication opportunities and information reception in the lives of deaf people.

Posted: Sun Jan 18, 1981 11:13 PM EST Msg: EGCR-1262-9264
From: LEONARD.MORSE
To: info
Subj: New Kid on the Block

Hi Everyone.... Congratulations to Phil and Arlyce Watson!
Arlyce gave birth to a 7 lb. 2 oz. baby boy on Friday morning Jan. 16, 1981.
They are both doing fine and will be going
home from Framingham Union Hospital tomorrow morning.
Brenda

Posted: Fri Jan 23, 1981 8:10 AM EST Msg: EGCR-1263-7465
From: LEVITOV
To: info
CC: levitov
Subj: YEAR OF DISABLED IYDP

1981 is The International Year of the Disabled Person: IYDP
There are many activities being planned to increase public awareness of rights, and needs. Also, there are many social events planned.

The Mayor's Office, Commission on the Physically Handicapped is coordinating IYDP for the city of Boston. All cities are participating.

Contact: Lisa Thorson c/o Levitov
 Commission on Handicapped
 City Hall (Telemail. I will post
 Boston 02201 on telemail).

tty/voice 725-3696

One event: April 24 and 25
 Leisure Awareness Day

Braintree, MA. There will be booths, recreation for all the family.

Contact: Jan Neri 848-5353 Braintree Hospital (Voice only)

Electronic mail is a communication tool and the bulletin boards are an efficient method of informing users of specific information which may not be easily available through other media; i.e., specific developments of federal regulations regarding "employment of the handicapped." During the start-up stage of the project, information services included news, weather and sports, medical and health information. We have concluded that this type of general news is not highly valued by DCI.DEAFNET user when they incur computer costs to receive this information. The hearing world receives this type of general news information via the car radio, and the nightly televised news "free of charge" due to advertising and/or sponsorship by business and industry. If this were also true for DCI.DEAFNET subscribers, we believe the bulletin boards would be used more as the data collected during the first two project years indicated.

The following are two typical responses to a survey on bulletin board use:

Posted: Wed Aug 26, 1981 9:49 PM EDT Msg: KGCR-1311-7782
From: RULE
To: EMERY
CC: ADMIN
 dci.users
Subj: RE: Lets look at the bulletin boards again

I used to read all bulletin boards until they started charging us. Now I read DCI.DEAFNET most of the time. Am working on a program to tell computer here to read them for me in the middle of night automatically, then I probably will be back looking them all over!
tom

Posted: Thu Aug 27, 1981 10:25 PM EDT
From: CAGAN.TEUBER
TO: SAGER
CC: DCI.USERS

Msg: FGCR-1312-2027

Subj: RE: BULLETIN BOARDS

Doug, I disagree with you.

Computer message systems are much more efficient than TTY, even for local people. Services like DEAF MESSANGER, BOSTON.MOVIES are not available any other place. I spend a long time, searching through newspapers, flyers that Movie Theatres send me, flyers that colleges and universities send me, looking for films that are accessible to deaf people (those that are in a foreign spoken language, but subtitled in English). A comprehensive listing is impossible to get any other place. It is strictly for the greater Boston Area Residents, or those willing to drive to this area for some non-discriminatory entertainment!

Janice

Other Communication Technologies Available

To help establish the value of computer message service, we looked at other communication technologies available and useful to the deaf community. For each technology, we checked the presence or absence of these capabilities believed most important for a deaf user. They are:

- * News and information services.
- * The ability to make ordinary TV usefully accessible to the deaf.
- * Support for rapid two-way and multi-way communication.

We looked at:

- * U.S. Mail, which offers slow two-way communication service to virtually all citizens.
- * Telecommunication Devices for the Deaf (TDD), a nationwide

group whose users communicate by linking teletypes or equivalent terminal devices throughout the telephone system.

- * Two suppliers of radio-broadcast teletype (Radio TTY and CENTEX) which can provide news and information service but not two-way communication.
- * Teletext, a broadcast TV service which "piggybacks" digital information onto unused portions of a standard TV signal. Teletext can support special information service and TV captioning, but not two-way communication services. Captioned TV, which typically uses Teletext technology to disseminate the captioning data.
- * Viewdata, which converts ordinary TV sets into computer terminals with the addition of keyboard/controller boxes. Viewdata can offer special information services and ultimately communication service, though the present services of this type have not been carried that far.
- * Cable TV, which has the potential of supplying greatly enriched TV services to all users. Cable TV could support Teletext-type services, though it does not appear to be doing so at the present time.
- * Computer message systems, the object of this application, which can support broadcast and two-way or multi-way communication, but not access to ordinary TV.
- * These observations are summarized in the table on the following page.

TECHNOLOGY	Up-to-Date Special News and Information	Allows Deaf Access to Regular TV	Computer- Aided Instruc- tion	Rapid Two-Way Communi- cation	Rapid Multi-Way Teleconfer- encing
U.S. MAIL	No	No	No	No	No
TDD	No	No	No	Yes	No
RADIO TTY	Yes	No	No	No	No
CENTEX	Yes	No	No	No	No
TELETEXT	Yes	Yes	No	No	No
CABLE TV	?	?	No	No	No
CAPTIONED TV	No	Yes	No	No	No
VIEWDATA	Yes	No	?	?	?
COMPUTER MESSAGE SYSTEM	Yes	No	Yes	Yes	Yes

All of the above, except for the U.S. Mail, require substantial investment by the user, and by the service provider, as well. All also require a monthly service fee.

We believe that computerized electronic mail systems will become lower in cost as advances in technology allow more computer power to be placed in the users' terminals, and large user populations create economies of scale in the use of store-and-forward central computers. A micro-processor was purchased in August, 1981 to first, provide an ASCII Bulletin Board in the Boston area; secondly, accommodate BAUDOT users; and thirdly, provide message transfer during night time hours to TELEMAL connections.

The availability of dual-access equipment (ASCII and BAUDOT) is another example of advances in technology which will make the system more cost-effective.

Description of User

The network has been composed of a nucleus of individual deaf families, schools for the deaf, agencies serving the deaf, service providers and hearing professionals.

June 30, 1980 (1st Quarter - 3rd Year)

<u>DESCRIPTION</u>	<u>NUMBER OF PEOPLE</u>
36 Families	54
6 Schools	86
5 Agencies serving the deaf	5
4 Service providers	4
17 Individuals with access to terminals at work	17

Total Number of Individuals who have used DCI.DEAFNET during the 3½ year demonstration -- 166

A. Deaf	Previous Users	59
	Current Users	50
	TOTAL	109
B. Hearing Professionals	Previous Users	36
(Computer, Educators, Service Providers)	Current Users	21
	TOTAL	57

Total Current Users (12/1/81) -- 71

Current user projections are as follows. Our minimum goal is 800 users on line by December, 1984.

December, 1982	180-200 users
December, 1983	400 users
December, 1984	800 users

Our projected user figure is deliberately low because the availability of dual-access equipment is uncertain at this date and will remain so for several months. Currently there are half

a dozen manufacturers who have completed the design and prototypes for this equipment. The first units are on the market and the manufacturers cannot keep up with the demand.

Currently the project is staffed by a full-time coordinator, a part-time director, a part-time secretary, and a public relations consultant. In addition many hours of technical expertise have been contributed to the project on a volunteer basis.

As the network grows and funding becomes available, more staff will be added to DCI.DEAFNET. Planned positions are an administrative assistant, a customer sales and service support person, and a marketing director.

Comparison of Technology & Services

DEAFNET

1. Send message immediately

2. Receive within five minutes

You don't have to be home to receive the call. Take the call when you are free.

3. Reception: fast, efficient

4. Live, personal conversation: difficult

5. One message can be sent to many with only one typing

TDD

1. Send message immediately

2. Receive immediately

You have to be at home. If not, you miss the call.

3. Reception: fast, if you are at home

4. Live, personal conversation: very good

5. Only one message can be sent

U.S. POSTAL SERVICE

1. Send message after mailing at Post Office or mailbox

2. Receive 1-3 days later (if not lost in the mail)

3. Reception: slow

4. Live, personal conversation: not available

5. One message can be sent to many with carbon copies, extra envelopes, stamps and paper

Major Expected Benefits

DCI.DEAFNET was designed to adapt electronic mail via a computer system to provide the deaf with an easily accessible form of personal communication and to bring a flow of information into their lives. The method was expected to prove that electronic mail could also benefit other handicapped persons such as the deaf/blind and wheelchair-bound persons. The deaf population was chosen as the target group for this demonstration due to the very limited communication opportunities and barriers imposed by their world of silence.

Actual Benefits

The project demonstrated that the deaf and the deaf/blind could learn to use this system and enjoyed doing so. The primary benefit is as an electronic mail system...to provide the deaf with an easily accessible form of personal communication. As the project evolved, personal use for communication, computer conferencing, and as a bulletin board for members of organizations were obviously the most valued aspects of DCI.DEAFNET.

It is important to note that DCI.DEAFNET does not replace real time, one-to-one communication which is available with a TDD. This makes the new dual-access equipment which provides both services so desirable.

Computer conferencing became a reality with the "Computers" bulletin board. It provides everyone (hearing and deaf) the opportunity to read and send messages to one mailbox discussing technology and techniques. A decision on which micro-processor to buy was made using computer conferencing.

Bulletin board information was well prepared and at first was well used. But it has not been cost-effective to the system nor to the user. Presently, most bulletin board messages are composed "on-line" using large amounts of computer time; in the Boston area messages will be composed "off-line" with the recently purchased micro-processor and sent during night time at lower rates which will make these bulletin boards more cost-effective. Also, a larger user base will spread costs more efficiently.

The following were the real benefits to the users:

Message Exchange

Exchanging messages with friends or fellow club or board members is the most valued aspect of DCI.DEAFNET. Sending announcements is also important. Consider the fact that many deaf people have gone through 12 years of school together and remain a close-knit group. Marriage, birth, and death announcements are a vital part of their lives -- but until the advent of electronic mail, several days could pass before important events were known.

Flow of Information

Listings of captioned movies in local theatres, informal movie reviews, notices of interpreted lectures, tours, meetings, church, and social activities are not listed in public newspapers, and are so desperately needed in the lives of deaf people.

A computer techniques information bulletin board is available for GTE, TELEMAIL system-wide access. It functions as computer conferencing; the subject is "computer technology".

To the Agencies Serving the Deaf

Massachusetts Office of Deafness (MOD) staff members were able to cut down the number of meetings attended because a great deal of communications was done via computer messages. Use of electronic mail between deaf committee members and MOD staff members to exchange messages and other information needed for the newspaper, "Deaf Independent," saved much travel and meeting time. When DCI.DEAFNET used HERMES, editing capability made it possible to revise text for publication. This editing capability is not as versatile on TELEMAIL.

Efficient communication situations have occurred between staff members at DCC and Deaf Senior Citizens. Time has proven that familiarity with the new technology works in favor of breaking down barriers to implementation and utilization.

Summarizing, it has been possible for offices directly serving deaf people to better keep in touch with those on the network by using electronic mail.

Barriers to Implementation

A combination of willing and/or enthusiastic user and working equipment is necessary to have successful participation in the system. Rehabilitation Services for the DEAF (RSD) is an example of this situation. The staff first used Teletype Model 33 with an ASCII Modem and were very willing to learn the new message system, but they were frustrated with mechanical problems from the beginning. DCC finally agreed to replace the Model 33 with a Teletype Model 43, but the office moved and we did not receive administrative approval for the telephone connection necessary for implementation. During the third year of the demonstration project, RSD returned their equipment to DCI.DEAFNET.

Barriers to implementation and utilization have been similar in schools as with individuals and agencies serving the deaf. These problems include proper telephone connection, good working terminal equipment, willing staff, adequate instruction, and sufficient follow-up for meeting and solving unexpected problems.

Educational Benefits to Users

ILIAD

ILIAD is a Computer-Aided Instruction program for the handicapped. There is a special need for English language instruction for deaf children and adults. School instruction is important but other forms of language tutorials should be available to make the deaf person a fluent writer and a capable reader. A specially designed tutorial for both the production and comprehension of written English, entitled ILIAD (Interactive Language Instruction Assistance for the Deaf), was developed under a special HEW/BEH (Bureau of Education for the Handicapped) grant to the Boston University School of Education. It was tested and evaluated by DCI.DEAFNET users.

There are many Computer-Aided Instruction (CAI) programs available, but none written with such a significant impact for the deaf community as the two described here. Both the ILIAD program and the LAN (Language-Adjusted News) were available in the demonstration DCI.DEAFNET.

LAN

Language-Adjusted News is a news service for deaf persons. For each regular news story that was entered in the system by the

staff at the Caption Center at WGBH (Boston), a linguistically controlled version was prepared with careful attention given to control of vocabulary, syntax, and inferential content of original materials. A large percentage of deaf people, whose reading level hinders and often prevents them from understanding newspapers and other print materials, have had no easily understood source of news until this experiment with Language-Adjusted News (LAN). They have been able to gather only bits of information or misinformation, depending on friends or relatives for explanations, or else have lived unaware of world events. Some deaf people do not have sufficient language needed to peruse daily news in newspapers and over the years have lost the motivation and desire to read. LAN may be a tool to increase reading skills and at the same time to provide daily news and information.

Teachers of the deaf at all six of the schools have used the LAN in different ways, depending on the abilities and needs of their students. Some used it for independent reading material, or as lessons for Social Studies, English, or reading classes. One teacher made special arrangements to transcribe the LAN into Braille for her deaf/blind students and informed us that this was the first time these students ever had national or international news available to them. One teacher had his student take the LAN into the mainstreamed classroom where both hearing and deaf students can discuss current events on an equal basis. Another teacher supplemented the LAN with pictures from newspapers and magazines, thereby creating a more concrete frame of reference for a low-verbal, limited learning-level student.

Although this service demonstrated DCI.DEAFNET's capability of providing useful information to this population, the service was discontinued in 1981 due to lack of funding.

Medical Information

Medical information was available on DCI.DEAFNET during the three year demonstration under sponsorship of Leonard Morse Hospital in Natick, MA. With the change in message systems (HERMES to TELEMAL) and the corresponding change in local user to national user, an administrative decision was made to reduce the health information.

Until there are more users in the Boston area, the hospital is unable to justify financing the health and medical information. As a temporary solution, the hospital shares weekly tips provided to other media and a volunteer enters them on to a bulletin board.

Cultural Information

During the two years that the Museum of Fine Arts was a part of the demonstration project, one of their staff members developed a program for the deaf community to enjoy regular and special Musuem exhibits. This included broadening the Museum's audience by making its collections as accessible as possible to all potential visitors. Developing audience interest and attendance go hand-in-hand with providing written materials and sign language tours and, consequently, outreach efforts to deaf audiences took the form of visiting deaf groups in the community and distributing flyers at meetings, through the mail, and via DCI.DEAFNET.

DCI.DEAFNET was successful in disseminating Museum information. Access to people on the system meant that users

had comfortable and quick avenues for asking questions and initiating dialogue about interpreted events at the Museum.

Museum staff felt that information sent via DCI.DEAFNET was responsible for at least 75% of deaf audience attendance at the Museum.

Other cultural institutions, such as the Museum of Transportation and the Aquarium, sent notices of their interpreted tours to the deaf community on DCI.DEAFNET through the Museum of Fine Arts contact. This was also true of the Loon and Heron Theater which produces plays for children.

Part of the goal for a cultural information center is to have a clearinghouse for signed cultural events in the Boston area. Evidence that this is possible occurs from different theater groups and museums that are presently including interpreters in their programs. Partial funding for this center was obtained by the Massachusetts Artists Foundation from the National Endowment for the Arts. Thus, continuation of the cultural events continued under different sponsorship.

Additionally, the Project Director of Theatre Access for the Deaf used the network "as a direct line to many of the people who have learned to enjoy these cultural performances." She has had many discussions on the interpreting, the concept of the theatre, the different performances, and the political aspect of approaching hearing theatre companies with this new idea. DCI.DEAFNET has also provided the chance to publicize events and receive ticket reservations directly.

Cultural information will continue on the network as long as funding is available.

BARRIERS TO IMPLEMENTATION AND UTILIZATION

The present TTY modem was designed by a deaf man in 1964. That TTY network has grown through the efforts of many deaf agents who have volunteered many hours. Technology has progressed rapidly and the computer explosion has produced a faster means of communication which combines computers and telephones. However, automatic acceptance is not assured. Normal resistance to anything new plus (in this case) priority ownership are psychological barriers that slow down anticipated acceptance and expansion.

1. Many deaf people lack the financial means to "experiment." Cost of equipment (\$500+) is relatively high for the average deaf person particularly as there are several other expensive priority purchases needed for day-to-day living situations, such as hearing aids, visual doorbell and light signal alarms and TDDs. Other expensive purchases which enhance family enjoyment, such as the television captioning decoder, continually drain the earnings of the average, underemployed deaf person who is caught in more of a bind than the hearing person in today's economy.
2. User fees, necessary to sustain the project, are another barrier to the project. The fees for electronic mail may seem too much of a luxury for the average deaf person. As long as he/she is not convinced of the value of the service, there will be reluctance to pay and participate.

As the user begins to use the system and sees his long distance bills (when using the TDD) decrease and his need to travel lessen, he will be convinced of the value of the service and will spread the word among his friends.

The concept that the use of electronic mail will increase the ability to communicate while decreasing costs and travel time is a key marketing principle of DCI.DEAFNET.

3. Repair costs for computer terminal equipment are very high. This presents a real threat to expansion. Paper and ribbon costs are also high.
4. Many deaf adults have not been exposed to the use of the telephone and the TTY. As more deaf schools and colleges provide telephone instruction in their curricula, young deaf adults will be more aware of the benefits of computer-aided telecommunications.
5. The change from HERMES to TELEMAL presented significant training problems to the original deaf and hearing users of DCI.DEAFNET. The resistance to change resulted in the loss of many users. A lack of follow-up with adequate instruction produced dissatisfied users and it has taken time to repair the psychological blow to the system. It is important to note that new users, those who were not exposed to the HERMES system, have not experienced the same difficulty in learning the TELEMAL system.
6. Now that there are users on a nationwide basis, hands-on instruction is not readily available. Possible solutions are:
 - a. The "Help" or "?" command on TELEMAL should be simplified.
 - b. DCI.DEAFNET should expand the staff to include a paid administrator to answer subscribers' questions.
 - c. Instruction sheets expanding on the existing TELEMAL User guides should be developed to answer specific questions.

- d. Friends of new users should be encouraged to teach.
- e. TELEMAL should install a TDD Hotline number for DCI.DEAFNET users answering such questions as:
"Why have I been just disconnected?" or
"Why is TELEMAL rejecting me?"

Technical Barriers

The primary technical barrier to the success of this project has been the need for the deaf user to have two types of equipment, 5-level BAUDOT for real time, one-to-one conversation and 8-level ASCII for electronic mail. With the advent of dual-access equipment, this major barrier should become less of a problem.

Institutional Resistance

1. Lack of adequate staff at most agencies and schools inhibits effective use of DCI.DEAFNET. The staff in social service agencies is often overworked/underpaid, changes frequently, and does not have the motivation to learn a new system of communication.
2. The cost of using the system for the agency or school was often prohibitive due to the fact that they were required to use a business phone with a business rate.
3. A DCI.DEAFNET user would often tie up an agency phone, restricting in-coming and out-going calls.
4. There were many difficulties in installing the equipment in a convenient, accessible place.
5. There was a serious lack of DCC staffing to give adequate instruction, support, and follow-up services to insure the adequate usage of DCI.DEAFNET by social agencies and schools

6. There was not enough time in most school curricula to teach the system to the students. However, in one school, (EDCO, Newton, Massachusetts) one interested teacher spent many hours with 14 students learning the system. The students and teacher were so enthusiastic that there was rarely a time when the terminal was unused. The teacher felt that DCI.DEAFNET was an asset to her program. It complimented her social studies program, improved her students' awareness of current events and gave them much needed practice in writing and reading skills.

Collaboration with other Institutions

The collaboration with SRI International was mutually beneficial. Technical knowledge and expertise was shared to test a national computerized network for deaf people. Three cities were on the interconnection: Boston, San Francisco, and Washington, D.C. Permission was received to use Arpanet for this research. SRI subscribers used both ASCII and BAUDOT equipment. Bulletin board information was shared.

Geographic Impediments

Now that the user base has expanded to a national level, there is a problem with hands-on training. The solution to this problem is currently being handled on an individual basis. However, long term solutions are being developed. (see pg. 24, #6)

Software Problems

TELEMAIL was designed and implemented so quickly that many software improvements are needed. DCI.DEAFNET cannot adjust the TELEMAIL software and this is a significant problem.

When a deaf user experiences computer "down time", he is unable to use the voice TELEMAIL Hot Line Number creating frustration and dissatisfaction with "technology". DCI.DEAFNET will suggest that TELEMAIL add a TDD Hot Line Number to alleviate this frustration.

The DCI.DEAFNET technical committee is preparing a study with recommendations for software improvements.

STRATEGIES FOR INSTITUTIONALIZATION

DCI.DEAFNET has been formed to continue to provide electronic mail services. Funds have been received from GTE to subsidize the service for another year.

The basic approaches to funding a service of this kind at the present time are:

- * Corporate gifts and grants
- * Foundations
- * Donations and contributions
- * Membership fees
- * Service charges (subsidized)

The ways to finance a service of this kind at the present time are:

1. Own a computer: The costs involved in owning a central system can be very high, not to mention the responsibilities involved. We do not view this as a practical approach, unless the organization can use the computer as a business enterprise (sell time or services to the public) when it is not heavily used for electronic mail. This might raise the money needed for operating costs, but requires good management.
2. Buy electronic message services: GTE's TELEMAL currently provides electronic mail service; its billing system (by connect time) is a reasonable though costly approach. While TELEMAL requires a minimum monthly bill, there are several electronic message services for computer hobbyists which require a one-time payment and higher connect time charges but enable individuals to join.

3. Piggy-back: This might be a solution for small groups who do not expect to have enough accumulated connect time to meet the minimum charges that electronic message services such as TELEMAIL require. The small group would become a member of another group (usually larger) who has an account with an electronic message service or its own computer which is not heavily used during non-peak time.

The following is the overall plan for DCI.DEAFNET, Fiscal Year 1981 - 1982.

- A. DCC will provide administrative resources to DCI to manage the expanded DCI.DEAFNET. The administrative resources will include the services of the Project Director, Project Coordinator, and a secretary. DCC building, vehicles, and office equipment will be the central facility for DCI.DEAFNET.
- B. User costs are described on page 41.
- C. The project coordinator will be responsible to plan and implement a marketing program to enroll new DCI.DEAFNET subscribers, many of whom will already have or will have access to an ASCII computer terminal. The project coordinator and other staff members will:
 1. Work with GTE's marketing and public relations departments;
 2. Prepare and place articles on the program in a variety of publications (deaf newsletters, computer magazines, national publications for the handicapped, etc.);
 3. Disseminate brochures and other DCI.DEAFNET literature;
 4. Demonstrate DCI.DEAFNET at conventions, conferences, and exhibitions;

5. Enlist the financial support or endorsement for DCI.DEAFNET by professional deaf organizations, schools for the deaf, deaf clubs, and alumni associations.

In order to find other sources of funding to continue and expand this project, the project coordinator will:

1. Work with other service providers to the deaf to assist these agencies to obtain funding and/or acquire equipment to join DCI.DEAFNET;
2. Aid individual subscribers who do not have terminals to acquire them;
3. Continue to collaborate with the staffs of other institutions to develop funding to continue existing programs on DCI.DEAFNET or to stimulate new services for DCI.DEAFNET;
4. Prepare proposals to other corporations, private foundations, and governmental agencies for additional monies and equipment until DCI.DEAFNET becomes self-sustaining:

Proposals were prepared for:

- a. NTIA (Department of Commerce) for additional terminal equipment
- b. Northeastern University (Boston, MA) to the Federal Department of Rehabilitation and Special Education for computer-aided telecommunications for deaf students (not received)

5. Develop "Friends of DEAFNET"

- a. These "friends" will contribute funds to subsidize a subscription(s) to DCI.DEAFNET for someone they know or some other deaf person in their community.
 - b. This project will develop a planning strategy, literature, and a regular subscription program.
 - c. "Friends" will include users of DCI.DEAFNET, their friends and families; corporations, small businesses in local towns and communities; philanthropic service organizations such as Lions, SERTOMA, and Kiwanis clubs.
6. Investigate the possibility of adding small business subscribers to the DCI.DEAFNET account. These subscribers would pay a monthly service charge to help defray DCI.DEAFNET's operating expenses.
7. Encourage computer buffs in the computer hobby field to join DCI.DEAFNET. They would also pay a service charge.
8. Add sponsors to DCI.DEAFNET. The news, for example, could be brought to the reader courtesy of the local bank.

The Principle Barriers to DCI.DEAFNET becoming self-supporting and fully implemented are: 1) acquisition of equipment and 2) operating funds for adequate staffing.

Solutions to the equipment problem are:

1. The availability of dual-access equipment.
2. Deaf clubs providing the equipment for their officers.
3. Donated equipment by computer companies.
4. Equipment available for many users in public places such as libraries, schools, and colleges.

Solutions to operating funds are:

1. Contributions and grants from corporations, businesses, and foundations will provide initial funds for several years until DCI.DEAFNET has a large enough user base to be self-supporting.
2. Government grants in research and education for the disabled will be a secondary source of operating costs during expansion.
3. Funds from disability advocacy groups will also be sought.

DISSEMINATION

As part of the overall public relations and marketing program to develop awareness of this new communications service, we have reached the following groups: professionals serving the deaf - including educators (elementary, secondary, and college level teachers), interpreters, rehabilitation and guidance counselors; national deaf organizations; many individual deaf persons; and the computer industry.

The following describes the major aspects of our public relation/marketing program:

I. VIDEO TAPE

"COMPUTER-AIDED TELECOMMUNICATIONS FOR THE DEAF" is a video tape production which describes the history and evolution of the project. We have shown this video tape to:

- A. GTE Corporate Headquarters (March, 1981) in Stamford, Ct. to acquaint the administration of GTE with the project and to encourage them to fund the program.
Funding was received.
- B. Chicago Industrial Communication Association (September, 1981), Chicago, IL to encourage funding from the computer industry.
- C. Prime Computer Company (August, 1981), Framingham, MA to encourage funding
- D. National Technical Institute for the Deaf (NTID) (2/81) at Rochester Institute of Technology in Rochester, NY to communications, computer science, and English department staff to encourage the teaching of computerized communication.

II. WORKSHOPS, CONFERENCES

We demonstrated or described electronic mail and DCI.DEAFNET services at the following workshops, conferences, conventions. Posters and other sales literature were developed.

- A. FCC sponsored Demonstration of Computer Based Electronic Mail Services for the Deaf (October, 1979)
- B. HEW sponsored on the Use of Telecommunications for HEW Services (June, 1979)
- C. Council of Organizations Serving the Deaf (COSD) (May, 1980) at the Deaf Community Center, Framingham, MA
"New Ideas in Personal Communication"
- D. Alliance for Information & Referral Services (June, 1981)
Boston, MA. The third national conference.
- E. Telecommunications for the Deaf, Inc. (TDI) (June, 1981)
Kansas City, Kansas. A national conference on "Better Communication: The Heart of Community Relations"
- F. Massachusetts Office of Deafness (MOD) (October, 1981)
Sturbridge, MA

III. MEDIA BLITZ

On August 14, 1981 GTE released a national mailing describing DCI.DEAFNET. This news release and photograph were picked up by the CBS national radio network and United Press International. The following lists radio and television appearances and newspaper stories resulting from this Blitz.

1. 8/17/81 WPDP (CBS) Washington, D.C.
Larry King Talk Show 2:45 p.m.
2. 8/17/81 MIS WEEK
Weekly national management/business magazine
in computers & electronics
3. 8/17/81 MIDDLESEX NEWS Framingham, MA
4. 8/18/81 KRO (CBS) Seattle, Washington
Jim French (Host of "Mid-Day" show)
5. 8/18/81 WOR, New York
Steve Dunlap Show 11 a.m.
6. 8/18/81 COMPUTER WORLD Feature Story
7. 8/24/81 WMCA New York
"AM with Ralph Howard" host 6:23 a.m.
8. 8/26/81 WSBK Channel 38 Boston, MA
Tom Larson Show 10 a.m.
9. 8/29/81 United Press International carried the photo and
caption on its wire service. A list of some of
the users is included in the appendix.
10. 8/31/81 TELEPHONY
11. 8/81 GTE NEWSLETTER
12. 9/81 NEW SOUNDS

13. 9/81 Silent News

14. 1/82 IEEE, Special Edition on "Office Automation". An article on computerized electronic mail and the handicapped worker written by Barbara Wagreich.

IV. NEWSLETTER

"Update" is the newsletter which is being mailed to current users and all other interested people.

The mailing list for the newsletter will be expanded.

V. BROCHURES

A. An information packet on DCI.DEAFNET has been prepared which includes history of the project, services, user fees, and how to join the network.

B. A brochure for deaf users and a brochure for advertisers or sponsors on the network suitable for mailings and distribution at conferences and conventions is being prepared.

VI. AD CAMPAIGN

An ad campaign directed toward the deaf user is being prepared for deaf publications.

VII. FEDERAL AGENCIES INVOLVEMENT

The Department of Education should act as a resource center or a clearinghouse of information which has been produced by the various telecommunications projects. We would encourage more workshops on telecommunications such as the workshop held for HEW Service on June 5-9, 1979 at the University of Maryland Adult Education Center.

Information of recent and on-going technological projects such as those sponsored by the Bureau of Education for the Handicapped Rehabilitation Service Administration can be included.

COSTING AND FINANCIAL INFORMATION

Start-up Costs (non-recurring)

	<u>Year 1</u> 4/78-3/79	<u>Year 2</u> 4/79-3/80	<u>Year 3</u> 4/80-11/81
Equipment			
Purchase:	\$54,146	\$13,415	- - -
Delivery:	1,350	- - -	- - -

Additional recruitment or training was not needed after the start-up phase in Year 1 since all of the staff remained with the project. Instructors and users associated with the project from the beginning continued in roles of leadership with the newly incorporated Deaf Communications Institute. Additional users joined the network and also contributed their time and professional knowledge of technical and management expertise. This volunteer support group contributed enormously to the successful incorporation of the non-profit institution, Deaf Communications Institute, and to the successful implementation and marketing of electronic mail services for the deaf.

COSTING & FINANCIAL INFORMATION

<u>Start-up Costs (nonrecurring)</u>	Year 1 (12 mos)	Year 2 (12 mos)	Year 3 (20 mos) (8-mo no-cost time extension)
Equipment (purchase)	\$53,661	\$12,996	- - - -
(delivery)	1,350	- - - -	- - - -
<u>Operational Costs (recurring)</u>			
Equipment (operation)			
* Computer time-sharing	35,456	53,945	42,000
Equipment (maintenance)	- - - -	2,098	4,024
Space Facilities	5,629	4,894	8,913
Technical staff	7,500	8,137	8,515
Service delivery staff	10,474	14,041	20,740
Management staff	16,000	16,800	29,630
Other			
Fringe Benefits	2,091	3,570	6,725
Supplies	2,551	2,792	3,500
Travel	1,349	2,066	3,000
Office Equipment	1,691	2,210	1,000
Miscellaneous	528	921	510
Research: Program Development - - - network interconnection and interface	- - -	10,000	18,400
Dissemination Report	- - - -	- - - -	5,000
* note: \$9,545 overage during Year 1 used in Year 2	+ 9,545	- 9,545	
	\$147,825	\$124,925	\$151,957

OPERATING BUDGET

DEAF COMMUNICATIONS INSTITUTE, INC.

FISCAL YEAR (July 1, 1981 - June 30, 1982) BUDGET

	TOTALS
INCOME	
USER FEES (70 current users)	\$ 8,400
GTE GRANT MONIES	72,000
INTEREST	1,700
OTHER INCOME	4,671
IN-KIND DONATED BY DEAF COMMUNITY CENTER	<u>51,480</u>
	\$138,251

EXPENSES	DCI MONIES	DCC (IN-KIND MONIES)	TOTALS
PROJECT COORDINATOR	\$16,640		\$ 16,640
FRINGE	3,060		3,060
DIRECTOR	3,000	\$9,000	12,000
TRAVEL	3,500		3,500
SECRETARY	4,000		4,000
SUPPLIES	2,000		2,000
PRINTING, PUBLICITY	2,000		2,000
TELEPHONE	1,700		1,700
DEMONSTRATIONS	2,000		2,000
EQUIPMENT PURCHASE	4,761		4,671
EQUIPMENT RENTED/LEASED			
Car (500 mi @ .18)		1,080	1,080
Terminals		31,800	31,800
Advent Screen		2,400	2,400
TERMINAL MAINTENANCE	3,000		3,000
RENT	1,800	3,600	5,400
UTILITIES	1,800	3,600	5,400
COMPUTER TIME	32,400		32,400
CONSULTANT	3,000		3,000
AUDIT	1,000		1,000
INTERPRETERS	600		600
FINANCE-PAYROLL	600		<u>600</u>
			\$138,251

Major Change in Direction

At the end of the first quarter during the third year of the project two significant events happened which caused a major change in direction for DCI.DEAFNET. The first was the announcement that funding for our computer center facility had not been awarded. The second was the availability of TELEMAL, a new electronic mail system developed by GTE. We had made a comparison study of prices and services available on other electronic mail systems and felt GTE's new system offered the most cost effective choice and nation-wide connection opportunities for deaf people throughout the country.

By piggy-backing on a commercial system and using non-prime time, considerable savings were realized. Funds were also now available in the grant to use for management and support services rather than for technical consulting which was not needed for a computer facility.

Because of the resulting cost savings, permission from HEW/OTP was requested and received for an 8-month no-cost time extension. These funds insured continuation of DCI.DEAFNET through the first few months of the institutional phase. Funds received from GTE will be used to continue marketing DCI.DEAFNET services and to subsidize users. With GTE spearheading the promotional campaign, DCI is confident that other businesses will add their financial support and that public awareness will result in a large number of subscribers.

Cost Sensitivities-Unit Costs

Electronic mail is now at a point where the cost is low enough for many businesses yet too high for most individual users. The cost for disabled consumers will depend both on advances in microelectronics and on the popularity of electronic communication with the general public.

As the cost of microcomputers falls, it will become cheaper to do the message composition and reading off-line and communicate with the central computer only for the transmission of messages.

PROFILES OF SOME AVERAGE USERS

(includes Storage & Copies)

<u>User #</u>	<u>Hours</u> <u>Cost</u>		<u>Hours</u> <u>Cost</u>		<u>Hours</u> <u>Cost</u>	
	April		May		June	
1	4	\$12	6	\$24	5	\$19
2	9	\$30	7	\$23	6	\$20
3	5	\$28	6	\$15	7	\$18
4	2	\$ 7	4	\$14	3	\$11
5	5	\$23	6	\$29	6	\$19
6	5	\$23	9	\$32	9	\$44
7	3	\$38	5	\$59	3	\$23
8	3	\$34	1	\$10	3	\$37
9	1	\$18	3	\$48	3	\$47
10	15	\$49	12	\$39	2	\$ 6

Prime -- \$14/hour

Non-Prime -- \$3/hour

The DCI Technical Committee is preparing a study of recommended changes based on our user feedback. These software changes would benefit all GTE's TELEMAIL accounts. Use of computer terminals which allow "off-line" composition is another strategy to reduce connect time charges. There are several personal home computers and associated modems available on the market today.

Cost Sharing

Data bases can and should be shared with all users of electronic mail services for the deaf. For example, Language Adjusted News (LAN) could be a national news service available to all schools for the deaf. Funding for this service is not currently available but would be a cost-effective project as it could benefit all deaf students.

Subscriber Pricing

The Board of Directors of Deaf Communications Institute is addressing the issue of making the system pay for itself. A plan has been formulated and will be put into effect in stages during the fiscal year 1981. It is as follows:

September 1981	--	individual user price structure
		Friends of Deafnet
October 1981	--	business, educational, and non-profit group price structure
September 1982	--	Third Annual Meeting membership dues
		other fund raising ventures

Based on projected operating expenses for fiscal year 81-82, DCI needs to raise \$60-80,000 for fiscal year 82-83. Twenty business Friends donating \$3,000 a year would provide this amount. We do not feel this is an impossible task. Subscribers will pay for their own connect charges. The 50% discount presently offered is part of an incentive plan to attract more users and more rapidly expand the network. We anticipate the subsidy money needed to offset the discount will be a steadily decreasing amount. Our projected goal is to have enough users within 5 years who can pay for their total connect charges.

We also predict that our Friends of Deafnet will stay with us for continued financial support generating business good will and advertising, encouragement for employment opportunities in the data processing field, and the opportunity to reach a large national consumer group.

GTE has already attracted media attention due to its participation in our project. This kind of "advertisement" is an incentive for other business involvement.

Income Generated Under the Grant

During the second year of the grant a sliding-scale fee was requested from the users. The results demonstrated the willingness of the deaf subscriber to pay a small amount of money for the service. The amount realized was \$4,671, and on May 30, 1981, this amount was transferred to the newly formed non-profit corporation, Deaf Communications Institute, whose Board Members had voted at their board meeting on April 21, 1981, to accept responsibility for the money according to Federal Regulations Title 45, Part 74, Subpart F, Section 74.42. Telephone permission was received from the grants officer to apply paragraph (e) (4) to obtain equipment to further the project objectives. During the months of August through October, this money was expended to purchase a microprocessor to establish a local Bulletin Board.

User fees collected between May, 81 - December, 81 (\$1,926) will be used toward operating expenses during the continuation according to (e) (2) of these regulations.

CONCLUSION

The HEW project: "Computer-Aided Telecommunications for the Deaf" is a success: systems and equipment were tested and evaluated, Deaf Communications Institute was incorporated, marketing and advertising campaigns instituted, and new users added daily. At the end of the HEW funding period, there were 70 users in 18 states. A grant from GTE (combined funding from GTE Laboratories, GTE Telenet, and GTE Corporate) made possible the continuation of DCI.DEAFNET.

Promotional and marketing efforts are reaping encouraging results promising the eventual self-sustained status for Deaf Communications Institute. Four national groups subscribed to mailboxes on DCI.DEAFNET since June, 1981 following the Telecommunications for the Deaf (TDI) convention in Kansas City, Kansas. After the convention 10 board members of TDI joined the network. This group is very important to the success of DCI.DEAFNET because they are deaf advocacy leaders who live in 6 different states and are able to attract and influence new users.

Another exciting group of users is from The World Games of the Deaf, an international sports organization for deaf athletes similar to the Olympics. The committee for these games, to be held in Los Angeles in 1985, has already begun work on plans for the games using DCI.DEAFNET to share information.

The venerable and prestigious Oral Deaf Adult Section of the Alexander Graham Bell Association has seven board members from five states who are using the system.

These 3 national organizations are using the bulletin boards for computer conferencing. It should prove a cost-effective method of lowering long-distance telephone costs, reducing travel costs, and making better plans and decisions.

National Association for the Deaf is the fourth national group on the network. NAD has four officers in three states using DCI.DEAFNET.

As a direct result of the media blitz spearheaded by GTE for DCI.DEAFNET in August, inquiries are received daily asking for more information about the network. We are responding to these inquiries with information regarding prices, equipment, users or the system, and procedures. A brochure on DCI.DEAFNET is available for direct mail and to accompany manufacturer's information on dual-level equipment. An advertising campaign is scheduled for December through March.

Also as a result of the media campaign, we received several inquiries from service organizations and corporations offering to assist the network during its expansion providing ASCII equipment and/or money for operating costs. These leads are being pursued.

We are meeting user estimates on schedule and implementing our marketing/advertising campaigns as planned. We anticipate continued success for DCI.DEAFNET.

We wish to thank the following corporations and foundations for their generous support and cooperation: The Artists Foundation, The Museum of Fine Arts, Leonard Morse Hospital, General Telephone and Electronics, WGBH Caption Center, SRI and Bolt Beranek and Newman.



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DEAF COMMUNICATIONS INSTITUTE
AT THE DEAF COMMUNITY CENTER
FRAMINGHAM, MASSACHUSETTS 01701
Mary Robinson 875-3617

TIME & PRICE LIST

DCI.DEAFNET

ELECTRONIC MAIL AND BULLETIN BOARD SERVICES

EFFECTIVE SEPTEMBER 1, 1981

PRIME TIME -- \$14/hour

OFF-PEAK -- \$ 7/hour

NIGHT TIME -- \$ 4/hour

7 AM - 6 PM -- Monday - Friday

6 PM - 9 PM -- Monday - Friday

7 AM - 9 PM -- Saturday, Sunday,
5 Holidays

9 PM - 7 AM -- EVERY DAY

* * * * *

CHARGES

Minimum charge of \$5/month

Discounts available for individuals: (see chart on reverse side)

50% discount on cost up to \$30

25% discount on additional costs between \$30 - \$50

No discount on amount over \$50

Maximum subsidy provided by DCI is \$20/month; for any amount over \$50, simply subtract \$20 (subsidy) and the user pays the difference.

* * * * *

Special Note:

If you do not want to accept the subsidy, you may refuse it.
You can make this a donation to DCI.

APPENDIX I

PRICE TABLE FOR USE OF TELEMAL

Connect & Storage Charges

Minimum charge - \$5 per user
Maximum DCI Subsidy - \$20 per user

Telemail Charge	User Pays	DCI Subsidy	Telemail Charge	User Pays	DCI Subsidy
\$ 1	\$ 5.00	\$ -	\$28	\$14.00	\$14.00
2	5.00	-	29	14.50	14.50
3	5.00	-	30	15.00	15.00
4	5.00	-	31	15.75	15.25
5	5.00	-	32	16.50	15.50
6	5.00	1.00	33	17.25	15.75
7	5.00	2.00	34	18.00	16.00
8	5.00	3.00	35	18.75	16.25
9	5.00	4.00	36	19.50	16.50
10	5.00	5.00	37	20.25	16.75
11	5.50	5.50	38	21.00	17.00
12	6.00	6.00	39	21.75	17.25
13	6.50	6.50	40	22.50	17.50
14	7.00	7.00	41	23.25	17.75
15	7.50	7.50	42	24.00	18.00
16	8.00	8.00	43	24.75	18.25
17	8.50	8.50	44	25.50	18.50
18	9.00	9.00	45	26.25	18.75
19	9.50	9.50	46	27.00	19.00
20	10.00	10.00	47	27.75	19.25
21	10.50	10.50	48	28.50	19.50
22	11.00	11.00	49	29.25	19.75
23	11.50	11.50	50	30.00	20.00
24	12.00	12.00	51	31.00	20.00
25	12.50	12.50	52	32.00	20.00
26	13.00	13.00	53	33.00	20.00
27	13.50	13.50	54	34.00	20.00

SURVEY OF NEWS SERVICES

Posted: Mon Jan 5, 1981 8:14 PM EST
From: WGBH
TO: INFO
CC: WGBH
Subj: TELL US WHAT YOU THINK

Msg: BGCR-1260-8670

The WGBH Caption Center would like to know more about the use of DEAFNET news services. We want to find out which news bulletin boards people read and how often they read them. Your answers will help us provide the best possible service.

Please SEND your answers to the WGBH mailbox. Just type the number of the question and letter of your answer. Sometimes you will have MORE than one answer.

1. Do you read any news bulletin boards, NEWS, MASS.NEWS, LAN, at least once a week?
a. yes b. no
2. How many people in your home ever use the news bulletin boards?
a. one b. two c. three or more
3. Which bulletin boards do you use at least once a week?
a. Mass.News b. News c. Language Adjusted News (LAN)
4. Which subjects do you read on the Mass.News bulletin board?
a. Mass. News b. Mass. Weather
5. Which subjects do you read on the News bulletin board?
a. World News b. National News c. Chronicle
6. How often do you read the LAN?
a. never b. once a week c. two or more times a week
7. When you read the LAN, do you also read the original world and national stories?
a. yes b. no c. I didn't know they cover the same subjects.
8. Where do you usually get news and information?
a. Deafnet b. newspapers or magazines c. TV news
d. Captioned ABC News
9. What ONE change might cause you to read the news bulletin boards more often?
a. more world and national news stories
b. more feature stories (arts, science, people)
c. more deaf-oriented stories
d. sports stories
e. additional features (quizzes, background stories)
f. other (please explain)
10. Please send us any other comments or suggestions you may have about the DEAFNET news service.

Thank you for taking the time to help us with your answers.

WGBH

FRIENDS OF DEAFNET - Plan

Friends of DCI.DEAFNET are needed to help the network grow and become self-supporting. Help is sought from business and industry for:

- 1) acquisition of equipment for users
- 2) operating funds for adequate staffing
- 3) funds to subsidize user fees

Equipment can be obtained by:

- 1) Service clubs purchasing equipment.
- 2) Deaf clubs providing the equipment for their officers.
- 3) Computer companies donating equipment.
- 4) Public places such as libraries, schools, and colleges providing equipment for many users.

Operating funds can be raised by:

- 1) Contributions and grants (sponsorship and patrons) from corporations, businesses, and foundations.
- 2) Government grants in research and education for the disabled will be a secondary source of operating costs during expansion.
- 3) Funds from disability advocacy groups and service clubs.

Based on projected operating expenses for fiscal year 81-82, DCI needs to raise \$60 - 80,000 for fiscal year 82-83. Twenty business Friends donating \$3,000 a year would provide this amount. We do not feel this is an impossible task. Subscribers will pay for their own connect charges. The 50% discount presently offered is part of an incentive plan to attract more users and more rapidly expand the network. We anticipate the subsidy money

needed to offset the discount will be a steadily decreasing amount. Our projected goal is to have enough users within 5 years who can pay for their total connect charges.

We also predict that our Friends of Deafnet will stay with us for continued financial support generating business good will and advertising, encouragement for employment opportunities in the data processing field, and the opportunity to reach a large national consumer group.

GTE has already attracted media attention due to its participation in our project. This kind of "advertisement" is an incentive for other business involvement.

FRIENDS OF DEAFNET

Plan A - to obtain equipment and provide temporary subsidy funds

- Provide computer terminals (new or used)
 - Provide subsidy money for connect time charges for a deaf subscriber
- | | |
|---------------------------|-----------------|
| 1 user (\$20 per month) | \$ 240 per year |
| 5 users (\$20 per month) | \$1200 per year |
| 10 users (\$20 per month) | \$2400 per year |

Plan B - to meet operating expenses

A \$5/month service charge will provide income for administrative overhead. During the beginning years of expansion, these funds are requested from sponsors and patrons of DCI.DEAFNET.

5 users @ \$5/mo	= \$ 25/mo	= \$ 300/year
10 users @ \$5/mo	= \$ 50/mo	= \$ 600/year
20 users @ \$5/mo	= \$100/mo	= \$1200/year
30 users @ \$5/mo	= \$150/mo	= \$1800/year
40 users @ \$5/mo	= \$200/mo	= \$2400/year
50 users @ \$5/mo	= \$250/mo	= \$3000/year

CRT EVALUATION

It seems that the use of CRTs remains a mixed opinion. For example, it is convenient to use CRT when a hard copy is not needed as in the case of reading non-essential materials or composing and correcting a message to be sent. In this regard, a frequent complaint is that computers waste a lot of paper and hence a CRT terminal is a welcome blessing. But then on a frequent basis, one would like to have a hard copy for several reasons:

1. To file away for later retrieval important information such as minutes of meetings or announcements of special events.
2. To be able to show other members of the family thus avoiding having to redial telemail - as would be the need when using a CRT.

When using the Hazeltine 1000, several users seemed to dislike the limited 12 lines as opposed to 24 lines on the ADM-3A. As an example, half as much information can be scanned at any one time (such as a message listing) whenever the scan command is used. Whenever reading or composing a message, one must continually recall the previous lines. Such problems are minimized with the use of 24-line ADM terminals.

Clearly, the solution to most of the problems mentioned above is to provide a hard copy printer attached to a CRT. Many CRTs have an extra port in the rear designed to accept such a printer.

One user recounted his experiences with the use of both CRT and hard copy printers. Both were available for his use but not connected together. To change from one terminal to another, he would have to hang up first to disconnect and then switch to the other terminal type before redialing normally. He would use a CRT first for a casual check of his messages then he would hang up and switch to a printer to obtain a hard copy version of any important information for later retrieval.

DEAFNET: A nationwide electronic mail system designed to meet the communication needs of the deaf

With DEAFNET you can
SEND and RECEIVE messages



SHARE information



CONFERENCE by computer



○ Posted: Fri Oct 2, 1981 ○
○ 12:45 a.m. ○
○ From: Watson ○
○ To: LaPlante ○
○ Subj: Your party ○
○ Text: Hi, Mimi. Thanks for your ○
○ party. I like to use the Model 43 ○
○ on DEAFNET and not worry that ○
○ you may be asleep this late at ○
○ night... ○

○ Posted: Tue Sept 8, 1981 ○
○ 10:42 p.m. ○
○ From: SBrenner ○
○ To: INFO Bulletin Board ○
○ Subj: Dual-level Equipment ○
○ Text: Exciting news! New ○
○ equipment can work as a TDD ○
○ and also as a computer terminal. ○
○ I am happy that DCC is now ○
○ testing different models for use ○
○ on DEAFNET... ○

○ Posted: Wed Sept 23, 1981 ○
○ 9:45 p.m. ○
○ From: Rule ○
○ To: COMPUTERS Bulletin ○
○ Board ○
○ CC: Fitzpatrick, Robinson ○
○ Subj: Local Bulletin Board ○
○ Text: This B.B. will start in Nov. ○
○ Thanks to all who shared info ○
○ and ideas to make this ○
○ possible... ○

**Who will I talk to ?
Who will talk to me?**

Keep in touch with:

Friends.

Board, Advisory, Committee Members
Clubs, Organization or Alumni Officers.
Business Associates.

What's DEAFNET For?

Planning meetings, workshops,
conventions, socials, athletic and alumni
events.

Making good business decisions.
Sharing information.

How Does DEAFNET Work?

Receive and send messages at your
convenience.

Communicate with staff members quickly.
Finish meetings without interruption.
Improve information flow.

Eliminates many long distance expenses.
Decreases travel time and expenses.
Lowers postage expenses.

**What Do I Need To Subscribe to
DEAFNET Services?**

Telephone Service.

An ASCII terminal with coupler.

A DEAFNET mailbox.

Deaf Communications Institute

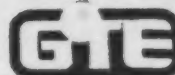
at DEAF COMMUNITY CENTER Bethany Hill Framingham, MA 01701

APPENDIX VI

MEDIA RELEASE - List of Circulation

Total Circulation to date of media which have used the picture or story is 3,151,936.

The Denver Post -- Denver, CO --Circ. 269,261
The News and Observer -- Raleigh, NC -- Circ. 163,414
Camden Courier-Post -- Camden, NJ -- Circ. 126,000
The Standard-Times -- New Bedford, MA -- Circ. 48,310
The Knickerbocker News -- Albany, NY -- Circ. 50,027
Calgary Sun -- Calgary, Canada -- Circ. 56,392
Milwaukee Sentinel -- Milwaukee, WI -- Circ. 171,240
Computerworld -- Circ. 102,100
Brooklyn Bulletin -- Brooklyn, NY
Van Nuys Valley News -- Van Nuys, CA -- Circ. 247,000
MIS Week -- Circ. 101,900
Telephony -- Circ. 34,300
The Syracuse Post Standard -- Syracuse, NY -- Circ. 90,000
San Francisco Examiner -- San Francisco, CA -- Circ. 160,000
Richmond Times-Dispatch -- Richmond, VA -- Circ. 215,335
Rocky Mountain News -- Denver, CO -- Circ. 293,733
The Boston Globe -- Boston, MA -- Circ. 501,520
Marshfield News-Herald -- Marshfield, WI -- Circ. 15,280
Wakefield Item -- Wakefield, MA -- Circ. 6,500
The News World -- Circ. 72,510
Middlesex Daily News -- Framingham, MA -- Circ. 54,000
San Diego Daily Transcript -- San Diego, CA -- Circ. 7,200
Caspar Star-Tribune -- Casper, WY -- Circ. 32,747
Marietta Daily Journal -- Marietta, GA -- Circ. 24,600
West Chester Local News -- West Chester, PA -- Circ. 35,300
Daily Times and Chronicle -- Woburn, MA -- Circ. 17,200
Chronicle and Times -- Reading, MA -- Circ. 6,280
Jacksonville Courier -- Jacksonville, IL -- Circ. 8,970
Kirksville Express and News -- Kirksville, MO --Circ. 9,960
Norwalk Hour -- Norwalk, CT -- Circ. 21,500
Newport News -- Newport, RI -- Circ. 15,469
Kenton Times -- Kenton, OH -- Circ. 8,500
Tuscumbia Standard and Times -- Tuscumbia, AL
Brunswick Times Record -- Brunswick, ME -- Circ. 12,212
The Daily News -- McKeesport, PA -- Circ. 39,000



DEAFNET CONTINUATION ASSURED

Alfred C. Viebranz
Senior Vice President
Corporate Communications

General Telephone &
Electronics Corporation

One Stamford Forum
Stamford, Connecticut 06904
203 357-2000

May 13, 1981

Rev. John P. Fitzpatrick
Director
Deaf Communications Institute
Deaf Community Center
95 Bethany Road
Framingham, MA 01701

Dear Father Fitzpatrick:

As you have already heard from Ed Housman, the GTE Contributions Committee has reviewed and approved the Deaf Communications Institute/Deaf Community Center request for a \$60,000 grant to help make possible the continuation of DEAFNET as a computer-assisted telecommunications service for the deaf. Payment of the grant will be shared \$20,000 apiece by General Telephone & Electronics Corporation and two of its subsidiaries--GTE Laboratories Incorporated and GTE Telenet Incorporated.

The Labs and Telenet payments will be made this year, and are covered by the enclosed two checks for \$20,000 each. The parent company's share will be paid in two installments--\$10,000 now and \$10,000 in early January 1982. A check for the first installment is enclosed.

During their review of the matter, the Committee raised the question of future GTE support of DEAFNET, and indicated that they view the \$60,000 grant as seed money toward DEAFNET'S goal of economic self-sufficiency in the next few years. More specifically, GTE support in 1982 and our support in subsequent years would be at a substantially reduced level. In 1982, for example, the Committee would not approve more than a total of \$20,000 (exclusive of the parent company's \$10,000 contribution in January 1982). The matter will be reviewed on an annual basis, but I thought it would be helpful, in your planning, to know our position.

We are indeed pleased to provide support of DEAFNET, and want to extend our best wishes to you and your associates in the Deaf Communications Institute/Deaf Community Center.

Sincerely yours,

A. C. VIEBRANZ

ACV:djm

Enclosure

- . Two checks @ \$20,000 each
- . One check @ \$10,000

60

APPENDIX VIII